CLAIMS

1. A communication system characterized in comprising:

a first communication device for electrifying an identification target having electrification properties by generating a quasi-electrostatic field modulated according to information to be sent; and

a second communication device for detecting change in the electrification condition of the identification target and demodulating the information based on the change.

2. The communication system according to claim 1, characterized in that the identification target is a human body.

3. The communication device according to claim 2, characterized in that each of the first communication device and the second communication device is of a portable type, and the first communication device and the second communication device are provided in the neighborhood of different human bodies, respectively.

4. The communication device according to claim 2, characterized in that the first communication device is of a portable type and provided in the neighborhood of a human body; and

the second communication device is provided on or in the neighborhood of a predetermined control target.

5. The communication system according to claim 1, characterized in that the first communication device comprises:

modulation means for generating a modulated signal through modulation according to the information; and

an electrification-inducing electrode for electrifying the identification target by generating the quasi-electrostatic field according to the modulated signal; and

the modulation means controls at least one of the power or the charge of the modulated signal to be supplied to the electrification-inducing electrode.

6. The communication system according to claim 1, characterized in that the first communication device comprises:

modulation means for generating a modulated signal through modulation according to the information; and

an electrification-inducing electrode for electrifying the identification target by generating the quasi-electrostatic field according to the modulated signal;

the second communication device comprises a detection electrode for detecting change in the electrification condition of the identification target; and

the distance between the electrification-inducing electrode and the detection electrode and the wavelength of the modulated signal to be supplied to the electrification-inducing electrode are selected such that the quasi-electrostatic field is dominant among electric fields.

7. The communication device according to claim 6, characterized in that the distance and the wavelength are selected such that the relation of $r = \lambda/2\pi$ is satisfied, where the maximum distance when communication

is performed between the first communication device and the second communication device is r and the wavelength is λ.

8. The communication system according to claim 1, characterized in that the second communication device comprises:

detection means for detecting change in the electrification condition of the identification target as a signal;

demodulation means for demodulating the information based on the signal detected by the detection means; and

leakage preventing means for preventing electrical leakage from the route from the detection means to the demodulation means.

9. The communication device according to claim 8, characterized in that the leakage preventing means causes the electrostatic capacity from the detection means to the ground via the demodulation means to be larger than the electrostatic capacity between the detection means and the ground.

10. The communication device according to claim 8, characterized in that the electrical leakage preventing means comprises:

a detection electrode for detecting change in the electrification condition of the identification target and guiding the change to the detecting means; and

a case for enclosing the detection means; and

physically separates the detection electrode and the case.

11. The communication device according to claim 8, characterized in that the electrical leakage preventing means connects only the

demodulation means to the ground, on the route from the detection means to the demodulation means.

12. The communication system according to claim 1, characterized in that the second communication device comprises:

a power supply electrode for generating the quasi-electrostatic field for power supply for the first communication device; and

coupling preventing means for preventing electrical coupling between the identification target and the ground, the coupling preventing means being provided on a passage through which the identification target passes.

13. The communication system according to claim 12, characterized in that the coupling preventing means is formed with a floor surface provided at a predetermined distance from the ground.

14. The communication system according to claim 12, characterized in that the coupling preventing means is formed with a low-dielectric-constant member covered over the passage and connected to the ground.

15. The communication device according to claim 2, characterized in that the second communication device comprises:

a power supply electrode for generating the quasi-electrostatic field for power supply for the first communication device;

a detection electrode for detecting change in the electrification condition of the human body caused as the human body walks; and

power supply means for supplying signals for power supply only while the change in the electrification condition is detected by the detection electrode.

16. The communication system according to claim 1, characterized in that the second communication device comprises:

a detection electrode for detecting change in the electrification condition of the identification target; and

a power supply electrode for generating the quasi-electrostatic field for power supply for the first communication device; and

the power supply electrode and the detection electrode is the same electrode.

17. The communication system according to claim 1, characterized in that the second communication device comprises:

a power supply electrode for generating the quasi-electrostatic field for power supply for the first communication device; and

power supply means for supplying a signal for power supply to the power supply electrode; and

the power supply means also uses the power supply signal as a carrier signal to be sent to the first communication device.

18. The communication system according to claim 1, characterized in that the second communication device comprises:

a power supply electrode for generating the quasi-electrostatic field for power supply for the first communication device; and

power supply means for supplying a signal for power supply to the power supply electrode; and

the first communication device obtains power via the identification target electrified by the quasi-electrostatic field generated from the power supply electrode.

19. A communication method for a first communication device and a second communication device to send and receive information via a quasi-electrostatic field, characterized in comprising:

a first step of electrifying an identification target having electrification properties by generating a quasi-electrostatic field modulated according to information to be sent; and

a second step of detecting change in the electrification condition of the identification target and demodulating the information based on the change.

20. The communication method according to claim 19, characterized in that the identification target is a human body.

21. A communication device characterized in comprising electrification-inducing means for electrifying an identification target having electrification properties by generating a quasi-electrostatic field modulated according to information to be sent; and

causing the identification target to operate as an antenna in a quasi-electrostatic field.

22. The communication device according to claim 21, characterized in that the identification target is a human body.

23. The communication device according to claim 21, characterized in that the electrification-inducing means comprises parallel plate electrodes; and

the parallel plate electrodes are formed with the electrode area and the distance between electrodes according to the reference frequency such that the strength of the induction field component of an electric field is below the noise floor specified according to the communication band.

24. The communication device according to claim 21, characterized in that the electrification-inducing means comprises sending-side parallel plate electrodes formed with such electrode area A_S and distance between electrodes d_S as satisfy, when the potential between electrodes Vs of the reference frequency is supplied to the sending-side parallel plate electrodes with the distance between electrodes d_R fixed, the following formula:

$$V_R = \alpha \times V_S \times A_S \times d_S \times d_R$$

where the potential between electrodes of receiving-side parallel plate electrodes is assumed to be V_R [V]; the distance between the receiving-side parallel plate electrodes, d_R [m]; the electrode area of the sending-side parallel plate electrodes, A_S [m^2]; the distance between the sending-side parallel plate electrodes, d_S [m]; the potential between the sending-side parallel plate electrodes, V_S [V]; and a constant depending on the distance between electrodes d_R, the electrode area A_S and the distance between electrodes d_S, α.

25. A communication device characterized in comprising demodulation means for detecting change in the electrification condition of an

identification target, the identification target, as a result of being caused to act as an antenna in a quasi-electrostatic field, almost isotropically forming a quasi-electrostatic field having information, and for demodulating the information based on the change.

26. The communication device according to claim 23, characterized in that the identification target is a human body.

27. A communication device for communicating with a predetermined communication counterpart, characterized in comprising sending parallel plate electrodes for generating an electric field; and

the sending parallel plate electrodes being formed with such electrode area A_S and distance between electrodes d_S as satisfy, when the potential between electrodes Vs of the reference frequency is supplied to the sending-side parallel plate electrodes with the distance between electrodes d_R fixed, the following formula:

$$V_R = \alpha \times V_S \times A_S \times d_S \times d_R$$

where the potential between electrodes of receiving-side parallel plate electrodes is assumed to be V_R [V]; the distance between the receiving-side parallel plate electrodes, d_R [m]; the electrode area of the sending-side parallel plate electrodes, A_S [m^2]; the distance between the sending-side parallel plate electrodes, d_S [m]; the potential between the sending-side parallel plate electrodes, V_S [V]; and a constant depending on the distance between electrodes d_R, the electrode area A_S and the distance between electrodes d_S, α.

28. The communication device according to claim 27, characterized in comprising generation means for generating a signal to be applied

to the sending parallel plate electrodes according to the working frequency.

29. A communication device for communicating with a predetermined communication counterpart, characterized in comprising receiving parallel plate electrodes for detecting an electric field generated from the communication counterpart; and

the receiving parallel plate electrodes being formed, without depending on the electrode area of the receiving parallel plate electrodes, such that the receiving parallel plate electrodes satisfy, when the potential between electrodes Vs of the reference frequency is supplied to the sending-side parallel plate electrodes with the electrode area A_S and the distance between electrodes d_S fixed, the following formula:

$$V_R = \alpha \times V_S \times A_S \times d_S \times d_R$$

where the potential between electrodes of receiving-side parallel plate electrodes is assumed to be V_R [V]; the distance between the receiving-side parallel plate electrodes, d_R [m]; the electrode area of the sending-side parallel plate electrodes, A_S [m^2]; the distance between the sending-side parallel plate electrodes, d_S [m]; the potential between the sending-side parallel plate electrodes, V_S [V]; and a constant depending on the distance between electrodes d_R, the electrode area A_S and the distance between electrodes d_S, α.